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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/778,172	02/07/2001	Akira Yabe	590146-2000	8328

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745 FIFTH AVENUE- 10TH FL.
NEW YORK, NY 10151

EXAMINER

FERRIS III, FRED O

ART UNIT	PAPER NUMBER
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2128

DATE MAILED: 05/04/2004

4

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/778,172

Applicant(s)

YABE, AKIRA

Examiner

Fred Ferris

Art Unit

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. *Claims 1-18 have been presented for examination based on applicant's disclosure filed 2 February 2001. Claims 1-18 have been rejected by the examiner.*

Drawings

2. *The formal drawing submitted on 2 February 2001 have been approved by the examiner.*

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. ***Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.***

Specifically, independent claims 1, 15, and 17 recite limitations relating to "automatically adjusting" a function that are vague and indefinite since the language of the claim does not specify an automatic process, the specific elements, or the steps required for adjusting the first function to achieve the claimed second function target value, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Further, the terms "relatively high non-linearity" and "evaluation result" in claims 1, 15, and 17 are relative terms that render the claim indefinite. The terms "relatively

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high non-linearity" and "evaluation result" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Dependent claims inherit this defect.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. ***Claims 1-18 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S.***

Patent 6,567,226 issued to Fuse.

Independent claims 1, 15 and 17 are is drawn to:

Method, Apparatus, and Code of optimizing (design) of an optical system by:

- ***Optimizing first optical property to a target value based on a first optimization function including an aberration (i.e. deviation/ abnormality)***
- ***Adjusting first (optimization) function using second optical property target value based on an evaluation result***
- ***Second optical property has high non-linearity compared to First***
- ***Re-optimizing based on first (optimizing) function adjustment***

Regarding independent claims 1, 15, and 17: Fuse discloses a method,
*apparatus, and computer code medium for **optimizing the design of an optical system by optimizing optical properties** (parameters) (CL21-L47) to a **target value** using an **optimizing function** (CL24-L59) that includes **aberrations** (CL31-L40-56). (A "target value" is merely a value of interest or a desired result in the optimization*

process, in the case Fuse, a target value is a property objective, see: CL14-L25 for example) Fuse further discloses **adjusting the optimization** using **multiple** (first, second, etc.) sets of **optical property values** (CL16-L27-44, CL24-L64, Fig. 25), comparing the **linearity** (CL36-L64-CL37-L27) between sets (first, second, etc.) of **optimized properties**, and repeating (re-optimizing) the optimization process (CL24-L64). (Also see: Abstract, Background, Summary of Invention, CL29-L19-CL30-L65, CL49-L5, CL53-L34-47, Figs. 1-12, 26-42)

Regarding dependent claims 2-14, 16, and 18: Fuse further discloses optimization based on first and second **evaluations** (i.e. candidate answers, CL7-35-55, CL16-L27-39) effecting a **first solution, weighted optical properties** (CL14-L49, CL17-L45-65), sample **object points** (Fig. 19, Abstract, Background), **sample rays** (Figs. 18, 22), **orthogonal coordinate components** (CL34-L51-67), and **modulation transfer function** (MTF) properties including **curvature and longitudinal aberrations** (CL31-L40-56).

5. **Claims 1, 15, and 17 are also rejected under 35 U.S.C. 102(b) as being anticipated by "Fast Image-quality-based optimization of optical system", S. J. Dobson, Applied Optics, Vol. 37, No. 34, December 1998.**

Regarding independent claims 1, 15, and 17: Dobson discloses techniques for optimizing the design of an optical system by **optimizing optical properties**

(parameters) (Section 1, 4) to a **target value** using an **optimizing function** (Section 2, 5) that includes **aberrations** (Section 3, 4, Tab. 1). (A "target value" is merely a value of interest or a desired result in the optimization process) Dobson further discloses **adjusting the optimization** using multiple (first, second, etc.) sets of optical property values (Section 2), comparing the linearity (Section 3-5) between sets (first, second, etc.) of **optimized properties**, and repeating (re-optimizing) the optimization process (Section 5).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,166,862 issued to Hashimura et al teaches optimizing the design of an optical system.

U.S. Patent 5,067,067 issued to Estelle et al teaches optimizing the design of an optical system.

U.S. Patent 5,786,940 issued to Robb teaches optimizing the design of an optical system.

"Design of a diluted aperture by use of the practical cutoff frequency", J.L. Flores, *Applied Optics*, Vol. 38, No. 38, December 1999 teaches optimizing the design of an optical system.

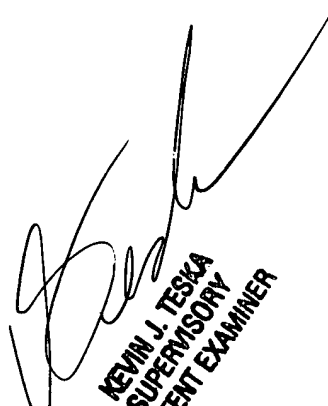
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 703-305-9670 and whose normal working hours are 8:30am to 5:00pm Monday to Friday.

Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 703-305-3900.

The Official Fax Numbers are:

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April 20, 2004



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